

**REMARKS**

**I. INTRODUCTION**

Claims 4-24, 28-36 and 44 have been cancelled, without prejudice. Applicants hereby reserve the right to pursue cancelled claims 4-24, 28-36 and 44 in this application and/or any subsequently-filed patent application. Claims 1-3, 25-27, 37, 38 and 45 have been amended as provided above merely to remove minor informalities therefrom, clarify the subject matter recited therein, and address the Examiner's comments in the interest of expediting the prosecution of the above-identified application, but not for any reason related to the patentability thereof. New claims 47-64 have been added. Claims 40-42 have previously been withdrawn. Accordingly, claims 1-3, 25-27, 37-39, 43 and 45-64 of the above-identified application are now under consideration.

Provided herein above, please find a claim listing indicating the cancellation of claims 4-24, 28-36 and 44, the amendments to claims 1-3, 25-27, 37, 38 and 45, the additions of claims 47-64, and the current status of other claims on separate sheets so as to comply with the requirements set forth in 37 C.F.R. § 1.121. It is respectfully submitted that no new matter has been added. Support for the amendments to claims 1-3, 25-27, 37, 38 and 45, and for the addition of new claims 47-64, can be found in the originally-filed application, including the specification, drawings and/or claims thereof. (See, e.g., Specification of the above-identified application, p. 6, ln. 22 – p. 11, ln. 12 and p. 13, ln. 11 – p. 14, ln. 10, and Figures 1-5).

**II. REJECTION UNDER 35 U.S.C. § 101 SHOULD BE WITHDRAWN**

Claims 1-8, 12-20, 24, 37-39, 43, 44 and 46 stand rejected under 35 U.S.C. § 101 as allegedly being directed to non-statutory subject matter. (*Id.*, p. 4).

**A. Claims 1-8, 12 and 43**

With respect to independent claim 1 and claims 2-8, 12 and 43 which depend therefrom, the Examiner contends that these claims “are allegedly drawn to an abstract idea and therefore *must* be evaluated further for providing the practical application of the judicial exception.” (*Id.*, *emphasis added*). Then the Examiner contends that these claims are allegedly “not so tied to another statutory class of invention because the method steps that are critical to the invention are [allegedly] not tied to any particular apparatus or machine and therefore do not meet the machine-or-transformation test as set forth in *In re Bilski*.” (Office Action, p. 5). The Examiner continues by contending that “while new claim 43 recites use of either a display or a storage arrangement, these embodiments [allegedly] constitute insignificant post-solution activity.” (*Id.*) Further, in response to Applicants arguments provided in Applicants Amendment and Response dated August 31, 2009 (the “Previous Response”), the Examiner contends that Applicants “argument is not persuasive because a processing arrangement [purportedly] does not necessarily have to encompass a processor (or any other structural embodiment).” (*Id.*, p. 6).

In view of the recent Federal Circuit decision of *In re Bilski*, currently under appeal with the United States Supreme Court, the test employed by the Examiner for 35 U.S.C. § 101 is improper. Indeed, with respect to the method claims, the *In re Bilski*

decision provides the currently-applied test. Specifically, the *In re Bilski* opinion states “that the ‘useful, concrete and tangible result’ inquiry is inadequate” and reaffirms that “the machine-or-transformation test outlined by the Supreme Court is the proper test to apply.” (*In re Bilski*, p. 20). “To the extent that some . . . decisions relied on considerations or tests, such as ‘useful, concrete and tangible result,’ that are no longer valid as explained above, those aspects of the decisions should no longer be relied on.” (*Id.*, p. 23). “Thus, we reexamine the facts of certain cases under the correct test to glean greater guidance as to how to perform the § 101 analysis using the machine-or-transformation test.” (*Id.*, pp. 23-24). “The machine-or-transformation test is a two-branched inquiry; an applicant may show that a process claim satisfies § 101 either by showing that his claim is tied to a particular machine, or by showing that his claim transforms an article.” (*Id.*, p. 24).

As the Examiner shall ascertain, independent claim 1 has been amended above to recite, *inter alia*, using hardware processing arrangement which comprises a processor, determining a plurality of subintervals of the at least one interval by repeatedly dividing the at least one interval until at least one predetermined criteria is met. As the Examiner shall further ascertain, claims 4-8 and 12 have been cancelled above without prejudice.

Applicants respectfully assert that amended independent claim 1, as well as claims 2, 3 and 43 which depend therefrom, certainly recite statutory subject matter, e.g., tied to a particular machine (e.g., a hardware processing arrangement, which

comprises a processor), thereby **tying the method to a particular machine** and satisfying the machine-or-transformation test of *In re Bilski*.

Further, Applicants assert that independent claim 1, as previously presented in the Previous Response, also recited statutory subject matter at least because of the explicit recitation of a processing arrangement, thereby **tying the method to a particular machine** and satisfying the machine-or-transformation test of *In re Bilski*.

However, in the latest Office Action, the Examiner maintains the rejection of previously presented independent claim 1, and claims 2-8, 12 and 43 which depend therefrom, under § 101. In response to Applicants arguments, the Examiner contends in the Office Action that a processing arrangement does not necessarily have to encompass a processor (or any other structural embodiment). (*Id.*, p. 6).

As an initial matter, Applicants respectfully assert that one having ordinary skill in the art would have understood that a processing arrangement certainly encompasses a processor. Indeed, an arrangement without a processor would not be configured or even capable of processing anything, and thus would not be a processing arrangement. Clearly, a processing arrangement comprises a processor, and thus, previously presented independent claim 1 certainly recites statutory subject matter.

Nevertheless, while Applicants maintain that one having ordinary skill in the art would have clearly understood that a processing arrangement comprises a processor, especially in view of the originally-filed claims, specification and drawings of

the above-identified application, to expedite the prosecution of the above-identified application and not for any reason related to the patentability thereof, independent claim 1 has been amended above to recite, *inter alia*, that “the hardware processing arrangement ... comprises a **processor** ....”

Therefore, for at least the reasons discussed herein above, the rejection of amended independent claim 1, and claims 2, 3 and 43 which depend therefrom, under 35 U.S.C. § 101 as allegedly being directed to non-statutory subject matter should be withdrawn.

With further respect to claim 43 which depends from amended independent claim 1, this claim recites, *inter alia*, the display and/or storage of the statistically-outlying data points in a storage arrangement in a statutory user-accessible format and/or user-readable format. In the latest Office Action, the Examiner admits that claim 43 recites a tie to a display or storage element, but then contends that such cooperation is allegedly an insignificant tie related to post-solution activity and therefore not statutory. (*Id.*) Applicants respectfully disagree for at least the following reasons.

As an initial matter, the tie to a display and/or a storage arrangement as recited in claim 43 is certainly not related to a post-solution activity. As one having ordinary skill in the art should understand, claim 43 recites a procedure for displaying or storing certain information in a storage arrangement in a user-accessible format and/or user-readable format, which, indeed, enables a user to access and/or read such information. According to certain exemplary embodiments of the above-identified application, such procedure can be an integral part of the process. Thus, the procedure

recited in claim 43 is certainly not a post-solution activity. Therefore, as the procedure recited in claim 43 is clearly **tied to a particular machine** (e.g., a storage arrangement), claim 43 certainly satisfies the **machine-or-transformation test of *In re Bilski***.

Further, contrary to the Examiner's assertion in the latest Office Action that "in the instant case, a physical transformation is [allegedly] not provided, as the instant claims [allegedly] merely provide steps of information manipulation" (*id.*, p. 5), Applicants respectfully point out that displaying information and/or storing information in a storage arrangement certainly involves more than merely information manipulation. Indeed, displaying and/or storing information in a storage arrangement in a user-accessible format and/or a user-readable format inherently involves a **physical transformation**, e.g., of data in the form of electrons used to display and/or store the information in a storage arrangement, thereby also satisfying the **transformation portion of the test of *In re Bilski***.

Moreover, the Examiner alleges that, while Applicants also argued in the Previous Response that the subject matter recited in independent claim 1 and the claims that depend therefrom also provide a useful, concrete and tangible result, and clearly a practical application, this test is no longer applied to considering statutory subject matter in processes. Applicants respectfully point out, however, that Applicants included such argument (in addition to the argument based on the machine-or-transformation test of *In re Bilski*) merely because the Examiner relied on such test as a

basis for the rejection of claim 1 (and claims 2-8 and 12 which depend therefrom) in the previous Office Action dated April 29, 2009 (the “Previous Office Action”).

Indeed, while Applicants believe that the arguments based on the machine-or-transformation test in the Previous Response should certainly have been sufficient, Applicants included the argument with respect to providing a useful, concrete and tangible result to make the point that, even under the Examiner’s incorrect test, the rejection of these claims under 35 U.S.C. § 101 still should have been withdrawn. For example, as Applicants argued in the Previous Response, “[t]herefore, even under the alleged proper test employed by the Examiner, the rejection of claim 1, and claims 2-8 and 12 which depend therefrom, under 35 U.S.C. § 101 as allegedly being directed to non-statutory subject matter, which test is improper in view of the prevalent case law, should be withdrawn.” (Previous Response, p. 16, Ins. 12-15).

#### **B. Claims 13-20 and 24**

In the Office Action, the Examiner contends (without providing any legislative or judicial support whatsoever) that these claims are allegedly “drawn to software, *per se*” because “all software is [allegedly] interpreted to be operable by processing arrangements” so “the instant set of claims is [allegedly] not statutory.” (Office Action, p. 5, Ins. 14-16). While Applicants respectfully disagree for at least the following reasons, as the Examiner shall ascertain, claims 13-20 and 24 have been cancelled without prejudice.

Indeed, Applicants respectfully assert that previously presented independent claim 13 recites statutory subject matter at least because of the explicit

recitation of a software arrangement operable by a processing arrangement being a statutory “apparatus” as explicitly authorized in 35 U.S.C. § 101.

However, in the Office Action, the Examiner maintained the rejection of previously presented independent claim 13, and claims 14-20 and 24 which depend therefrom, under § 101 (as discussed herein above).

Thus, as indicated herein above, while Applicants maintain that previously presented independent claim 13 certainly recites statutory subject matter, to expedite the prosecution of the above-identified application and not for any reason related to the patentability thereof, claims 13-20 and 24 have been cancelled herein above without prejudice.

Therefore, for at least the reasons described herein above, the rejection of claims 13-20 and 24 under 35 U.S.C. § 101 as allegedly being directed to non-statutory subject matter is now moot, and should be withdrawn.

### **C. Claims 37-39**

In the Office Action, the Examiner contends that “this set of claims encompasses the interpretation of a processing arrangement as [allegedly] not requiring structure (i.e. a structural element corresponding to a processing arrangement, such as a processor, is not recited).” (*Id.*, p. 5, lns. 18-21).

As the Examiner shall ascertain, independent claim 37 has been amended and now recites, *inter alia*, a system comprising a “hardware processing arrangement which comprises a processor and operably configured to” execute the recited



procedures of independent claim 1.” Claims 38 and 39 depend from amended independent claim 37.

Applicants respectfully assert that amended independent claim 37, as well as claims 38 and 39 which depend therefrom, certainly recite statutory subject matter. Indeed, a system comprising a hardware processing arrangement which comprises a processor, as explicitly recited in amended independent claim 37, is certainly statutory subject matter under 35 U.S.C. § 101. Accordingly, the rejection of independent claim 37 and the claims that depend therefrom (as amended) under 35 U.S.C. § 101 should be withdrawn.

Further, Applicants maintain that independent claim 37, as previously presented in the Previous Response, also recites statutory subject matter at least because of the explicit recitation of a system comprising a processing arrangement being statutory subject matter under 35 U.S.C. § 101. As discussed above, one having ordinary skill in the art should certainly understand that a processing arrangement inherently involves a processor, else such arrangement would not be a processing arrangement.

In the Office Action, however, the Examiner maintains the rejection of previously presented independent claim 37, and claims 38 and 39 which depend therefrom, under § 101 (as discussed herein above). Thus, as indicated herein above, while Applicants maintain that previously presented independent claim 37 certainly recites statutory subject matter, to expedite the prosecution of the above-identified application and not for any reason related to the patentability thereof, independent claim

37 has been amended to recite, *inter alia*, a system comprising a hardware processing arrangement which comprises a **processor**.

Therefore, for at least the reasons described herein above, the rejection of independent claim 37 and claims 38 and 39 which depend therefrom (as amended) under 35 U.S.C. § 101 as allegedly being directed to non-statutory subject matter should be withdrawn.

#### **D. Claims 44 and 46**

In the Office Action, the Examiner includes claims 44 and 46 as allegedly being rejected under 35 U.S.C. § 101 (*id.*, p. 3, ln. 23), but fails to specifically address any reasons for such rejection in the Office Action. Indeed, to the contrary, the Examiner admits that “claims 44 and 46 ARE statutory because each recites the practical application of configuring the processing arrangement to either a display or a storage arrangement.” (*Id.*, p. 6, lns. 6-8). Additionally, as the Examiner shall ascertain, claim 44, which previously depended from now-cancelled independent claim 13, has been cancelled herein above without prejudice.

Therefore, for at least the reasons provided herein above, the rejection under 35 U.S.C. § 101 of now-cancelled claim 44, and of claim 46 which depends from amended claim 37, is now moot and should be withdrawn for at least the reasons described herein above.

**IV. REJECTIONS UNDER 35 U.S.C. § 112 SHOULD BE WITHDRAWN**

Claims 4-8, 12, 16-20, 24, 28-32 and 36 stand rejected under 35 U.S.C. § 112, second paragraph as allegedly being indefinite. (*Id.*, p. 7).

In the latest Office Action, the Examiner contends that procedure “d of claims 4, 16 and 28 are [allegedly] indefinite because it is [allegedly] indefinite as to the means of shifting a matrix which represents data values, by a mass (i.e. a weight) [and that for] the purposes of examination, it will be interpreted that this step comprises shifting the rows of a matrix by a constant.” (*Id.*, p. 7). In response to arguments provided in the Previous Response, the Examiner purports that in the Previous Response, Applicants argue “that the amendments to claims 4, 16 and 18 overcome the rejections [and that Applicants further argue] that since the specification discloses that shifting rows of the matrices requiring shifting the center of mass of the set, the claims are definite.” (*Id.*, p. 8). The Examiner contends that “absent this teaching of the specification as part of the instantly rejected claims, the claims are open to broader (and in this case indefinite) forms of interpretation.” (*Id.*)

As an initial matter, as the Examiner shall ascertain, claims 4-8, 12, 16-20, 24, 28-32 and 36 have been cancelled herein above without prejudice. Therefore, Applicants respectfully assert that the rejection of now-cancelled claims 4-8, 12, 16-20, 24, 28-32 and 36 under 35 U.S.C. § 112, second paragraph as allegedly being indefinite is now moot, and should be withdrawn for at least such reason.

Additionally, Applicants respectfully assert that the interpretation of the subject matter recited in now-cancelled claims 4, 16 and 18, and, based on such

interpretation, the rejection of these claims under 35 U.S.C. § 112, second paragraph as allegedly being indefinite are improper.

For example, Applicants respectfully assert that the Examiner's interpretation that this procedure allegedly "comprises shifting the rows of the matrix by a constant" (Office Action, p. 7) is improper. Clearly, one having ordinary skill in the art should in no way interpret the recitation in now-cancelled claims 4, 16 and 18 as shifting each row by a constant. Indeed, the Examiner incorrectly reiterated the recitation of these claims in the Office Action as purportedly "shifting a matrix which represents data values, by a mass (i.e. a weight)." (*Id.*). Applicants respectfully point out first that as recited in these claims, "each row of the matrix" is shifted, not the "matrix" itself. Second, now-cancelled claims 4, 16 and 18 explicitly recited shifting the rows by a "center of mass", not "mass". Third, it is respectfully asserted that "mass" can not be simply interchanged with "weight", as the Examiner purports in the Office Action.

Further, Applicants respectfully point out that the teaching of the specification to which the Examiner refers includes an exemplary embodiment that is explicitly recited in now-cancelled claims 4, 16 and 18. Indeed, as discussed in paragraph [0020] of the specification of the present application, "each row of [the matrix] is shifted by a center of mass of the set." Now-cancelled claims 4, 16 and 18 recite, *inter alia*, "shifting each row of the matrix by a center of mass of the at least one dataset." Thus, certainly, now-cancelled claims 4, 12 and 18 recite an exemplary embodiment in accordance with the above-identified application that is explicitly taught by the specification. Therefore, the Examiner's contention that this teaching of the

specification is allegedly absent in now-cancelled claims 4, 16 and 18, thereby making them allegedly indefinite, is misplaced. Indeed, Applicants respectfully assert that one having ordinary skill in the art at the time the above-identified application was filed would certainly understand how these claims should be interpreted, especially in light of the specification.

Thus, the interpretation by the Examiner in the Office Action of now-cancelled claims 4, 16 and 18, and the rejection of now-cancelled claims 4, 16 and 18, and of claims 5-8, 12, 17, 19, 20, 24, 28-32 and 36 which depend therefrom respectively, under 35 U.S.C. § 112, second paragraph as allegedly being indefinite is improper.

Nevertheless, to expedite the prosecution of the above-identified application and not for any reason related to the patentability of the subject matter recited in now-cancelled claims 4-8, 12, 16-20, 24, 28-32 and 36, these claims have been cancelled without prejudice as provided herein above. Therefore, the rejection of now-cancelled claims 4-8, 12, 16-20, 24, 28-32 and 36 under 35 U.S.C. § 112, second paragraph as allegedly being indefinite is now moot, and should be withdrawn for at least the reasons described herein above.

**V. REJECTIONS UNDER 35 U.S.C. §§ 102(b) and 103(a) SHOULD BE WITHDRAWN**

Claims 1-3, 5, 37-39, 43 and 46 stand newly rejected under 35 U.S.C. § 102(b) as allegedly being anticipated by J. Quackenbush, Microarray Data Normalization and Transformation, Nature Genetics Supplement, vol. 32, pp. 496-501, 2002 (the "Quackenbush Publication"). (See *id.*, p. 9). Claim 4 stands newly rejected

under 35 U.S.C. 103(a) as allegedly being unpatentable over the Quackenbush Publication, in view of Pearson, Philosophical Magazine, vol. 2, 1901 pp. 559-572 (the "Pearson Publication"). (See *id.*, p. 12). Claims 6-8 and 12 stand newly rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over the Quackenbush Publication in view of Journal of Computational Chemistry, vol. 17, 1996, pp. 1229-1244 (the "Beroza Publication"). (See *id.*, p. 13-14). Claims 13-15, 17, 25-27, 29, 44 and 45 stand newly rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over the Quackenbush Publication in view of U.S. Patent No. 6,221,592 issued to Schwartz et al. (the "Schwartz Patent"). (See *id.*, p. 15). Claims 16 and 28 stand newly rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over the Quackenbush Publication, in view of the Schwartz Patent and the Pearson Publication. (See *id.*, p. 17). Claims 18-20, 24, 30-32 and 36 stand newly rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over the Quackenbush Publication, in view of the Schwartz Patent and the Beroza Publication. (See *id.*, pp. 18-19).

As an initial matter, to expedite the prosecution of the above-identified application, and not for reason related to the patentability thereof, claims 4-24, 28-36 and 44 have been cancelled without prejudice as provided herein above.

Applicants respectfully assert that the Quackenbush Publication fails to disclose the subject matter recited in amended independent claims 1 and 37, claims 2, 3 and 43, and claims 38, 39 and 46 which depend from amended independent claims 1 and 37, respectively for at least the reasons set forth herein below. Further, Applicants respectfully assert that amended independent claim 25, and claims 26, 27 and 45 which

depend therefrom are non-obvious over the alleged combination of the Quackenbush Publication and the Schwartz Patent for at least the reasons set forth herein below.

In order for a claim to be rejected as anticipated under 35 U.S.C. § 102(b), each and every element as set forth in the claim must be found, either expressly or inherently described, in a single prior art reference. Manual of Patent Examining Procedure §2131; *also see Lindeman Maschinenfabrik v. Am Hoist and Derrick*, 730 F.2d 1452, 1458 (Fed. Cir. 1984).

“To reject claims in an application under Section 103, an examiner must show an unrebutted *prima facie* case of obviousness.” *In re Rouffet*, 47 U.S.P.Q.2d 1453, 1455 (Fed. Cir. 1998). The Supreme Court in *Graham v. John Deere*, 383 U.S. 1, 148 USPQ 459 (1966), stated:

Under Section 103, the scope and content of the prior art are to be determined; differences between the prior art and the claims at issue are to be ascertained; and the level of ordinary skill in the pertinent art resolved. Against this background, the obviousness or nonobviousness of the subject matter is determined.

Indeed, to sustain a rejection under 35 U.S.C. § 103(a), there must be some teaching, other than the instant application, to alter the prior art to arrive at the claimed invention. “The problem confronted by the inventor must be considered in determining whether it would have been obvious to combine the references in order to solve the problem.” *Diversitech Corp. v. Century Steps, Inc.*, 850 F.2d 675, 679 (Fed. Cir. 1998).

The objective standard for determining obviousness under 35 U.S.C. § 103, as set forth in *Graham v. John Deere, Co.*, 383 U.S. 1 (1966), requires a factual determination to ascertain: (1) the scope and content of the prior art; (2) the level of ordinary skill in the art; and (3) the differences between the claimed subject matter and the prior art. Based on these factual inquiries, it must then be determined, as a matter of law, whether or not the claimed subject matter as a whole would have been obvious to one of ordinary skill in the art at the time the alleged invention was made. *Graham*, 383 U.S. at 17. Courts have held that there must be some suggestion, motivation or teaching of the desirability of making the combination claimed by the applicant (the “TSM test”). See *In re Beattie*, 974 F.2d 1309, 1311-12 (Fed. Cir. 1992). This suggestion or motivation may be derived from the prior art itself, including references or disclosures that are known to be of special interest or importance in the field, or from the nature of the problem to be solved. *Pro-Mold & Tool Co. v. Great Lakes Plastics, Inc.*, 75 F.3d 1568, 1573 (Fed. Cir. 1996).

Although the Supreme Court criticized the Federal Circuit’s application of the TSM test, see *KSR International Co. v. Teleflex Inc.*, 127 S. Ct. 1727, 1741, (2007) the Court also indicated that the TSM test is not inconsistent with the *Graham* analysis recited in the *Graham v. John Deere* decision. *Id.*; see *In re Translogic Technology, Inc.*, No. 2006-1192, 2007 U.S. App. LEXIS 23969, \*21 (October 12, 2007). Further, the Court underscored that “it can be important to identify a reason that would have prompted a person of ordinary skill in the relevant field to combine the elements in the way the claimed new invention does.” *KSR*, 127 S. Ct. at 1741. Under the precedent established in *KSR*, however, the presence or absence of a teaching, suggestion, or



motivation to make the claimed invention is merely one factor that may be weighed during the obviousness determination. *Id.* Accordingly, the TSM test should be applied from the perspective of a person of ordinary skill in the art and not the patentee, but that person is creative and not an automaton, constrained by a rigid framework. *Id.* at 1742. However, “the reference[s] must be viewed without the benefit of hindsight afforded to the disclosure.” *In re Paulsen*, 30 F.3d 1475, 1482 (Fed. Cir. 1994).

The prior art cited in an obviousness determination should create a reasonable expectation, but not an absolute prediction, of success in producing the claimed invention. *In re O’Farrell*, 853 F.2d. 894, 903-04 (Fed. Cir. 1988). Both the suggestion and the expectation of success must be in the prior art, not in applicant’s disclosure. *Amgen, Inc. v. Chugai Pharmaceutical Co., Ltd.*, 927 F.2d 1200, 1207 (Fed. Cir. 1991) (citing *In re Dow Chem. Co.*, 837 F.2d 469, 473 (Fed. Cir. 1988)). Further, the implicit and inherent teachings of a prior art reference may be considered under a Section 103 analysis. *See In re Napier*, 55 F.3d 610, 613 (Fed. Cir. 1995).

Secondary considerations such as commercial success, long-felt but unsolved needs, failure of others, and unexpected results, if present, can also be considered. *Stratoflex, Inc. v. Aeroquip Corp.*, 713 F.2d 1530, 1538-39 (Fed. Cir. 1983). Although these factors can be considered, they do not control the obviousness conclusion. *Newell Cos. v. Kenney Mfg. Co.*, 864 F.2d 757, 768 (Fed. Cir. 1988).

To establish obviousness, the prior art references must be evaluated as a whole for what they fairly teach and neither the references’ general nor specific teachings may be ignored. *Application of Lundsford*, 357 F.2d. 385, 389-90 (CCPA

1966). A reference must be considered for all that it teaches, not just what purportedly points toward the invention but also that which teaches away from the invention. *Ashland Oil, Inc. v. Delta Resins & Refractories*, 776 F.2d. 281, 296 (Fed. Cir. 1985).

The Quackenbush Publication is a review article that relates to microarray data normalization and transformation and, in particular, “focuses on the much more mundane but indispensable tasks of ‘normalizing’ data from individual hybridizations to make meaningful comparisons of expression levels, and of ‘transforming’ them to select genes for further analysis and data mining.” (Quackenbush Publication, Abstract). Indeed, the Quackenbush Publication describes that “[t]he use of replicates can help eliminate questionable or inconsistent data from further analysis [and that] the lowest-adjusted  $\log_2(A_i/B_i)$  values for two independent replicates are plotted against each other element by element for hybridizations to a 32,448-element human array.” (*Id.*, p. 499). This publication goes on to describe, with reference to Fig 3. thereof, that [o]utliers in the original data (in red) are excluded from the remainder of the data (blue) selected on the basis of a two-standard-deviation cut on the replicates.” (*Id.*)

Amended independent claims 1, 25 and 37 have been amended above to recite, *inter alia*, the determination of at least one interval associated with a dataset, **the determination of a plurality of subintervals of the at least one interval by repeatedly dividing the at least one interval until at least one predetermined criteria is met**, and **the determination of statistically-outlying data points present in the at least one dataset based on information related to the subintervals**, where each particular data point of the statistically-outlying data points is (i) associated with a

particular interval of the subintervals, and (ii) determined as a function of a length of the particular subinterval of the subintervals associated with the particular data point.

Applicants respectfully assert that the Quackenbush Publication does not at all disclose the determination of a plurality of subintervals by repeatedly dividing an interval until a criteria is met, much less the determination of statistically-outlying data points present in the dataset based on information related to the subintervals, much less still where each of the statistically-outlying data points is associated with a particular subinterval, and determined as a function of the length of such subinterval, as explicitly recited in amended independent claims 1, 25 and 37 of the above-identified application.

As an initial matter, in the latest Office Action, the Examiner asserts that the Specification of the above-identified application describes a multiscale strip function on page 4, Ins. 6-20. The Examiner contends that “this function is disclosed as [allegedly] comprising three strips: a first strip with data and outliers, a second strip at different scales and locations and approximately the same ratio between the points inside versus outside the strip, and a third strip that adaptively estimates standard deviations more precisely.” (Office Action, p. 9).

Applicants respectfully assert, however, that the Examiner’s interpretation of this section of the Specification is incorrect. Indeed, the Examiner’s oversimplified reiteration of this section of the Specification, and omits and/or misrepresents significant recitations that describe the exemplary three strips, such as, *e.g.*, the different scales and measure of the strip’s complexity in connection with the first exemplary strip, the ratio between the number of points outside the strip and the total number of points in

connection with the second strip, and that the third strip may estimate adaptively the second moments of the distances of the points from the principal axis.

Based on this incorrect interpretation of a multiscale strip function, the Examiner asserts in the latest Office Action that “Figure 3 on page 499 of [the] Quackenbush [Publication purportedly] illustrates a set of data with outliers in red and non-outliers in blue [and that] outliers are chosen based on information in the combined data set (i.e. standard deviations from the mean of the data).” (Office Action, p. 10).

While Applicants respectfully assert that the Examiner’s interpretation of a multiscale strip function is flawed, and, moreover, that the Quackenbush Publication does not even teach or suggest a multiscale strip function based on such flawed interpretation, nevertheless, to expedite the prosecution of the above-identified application and not for any reason related to the patentability thereof, independent claims 1, 25 and 37 have been amended herein above to exclude the recitation of a multiscale strip function at all. Rather, as described herein above, independent claims 1, 25 and 37 have been amended to provide, *inter alia*, the determination of statistically-outlying data points present in at least one dataset using the determination procedures recited herein above (e.g., based on a determination of a plurality of subintervals by repeatedly dividing an interval until at least one predetermined criteria is met). Applicants respectfully assert that the Quackenbush Publication does not disclose, teach or suggest such explicit recitations of amended independent claims 1, 25 and 37, and the Examiner does not assert that it does.

Applicants respectfully assert that the Pearson Publication, the Beroza Publication and the Schwartz Patent fail to cure at least the deficiencies described herein above with respect to the Quackenbush Publication.

Rather, as provided on page 559 of the Pearson Publication, for example, the Pearson Publication describes determining the allegedly “best-fitting” straight line or plane to represent a system of points. (See, e.g., Pearson Publication, p. 559, *emphasis added*). The Pearson Publication uses a linear regression to perform such function. Clearly, the linear regression described in the Pearson Publication in no way cures the deficiencies of the Quackenbush Publication to teach or suggest the determination of statistically-outlying data points present in at least one dataset using the determination procedures recited herein above (e.g., based on a determination of the subintervals by repeatedly dividing an interval until at least one predetermined criteria is met), as explicitly recited in amended independent claims 1, 25 and 37 of the above-identified application.

Turning to the Beroza Publication, this publication relates to “use [of] continuum electrostatic theory to calculate  $pK_a$ s of amino acids in protein.” (Beroza Publication, Abstract). “A Green's function formalism, based on a finite-difference solution to the Poisson-Boltzmann equation for a unit point charge, yields electrostatic potentials that allow calculation of amino acid  $pK_a$ s to an estimated accuracy of tenths of a  $pK_a$  unit.” (*Id.*) “Using this method, ... a sensitivity analysis of calculated  $pK_a$ s in the photosynthetic reaction center [was performed].” (*Id.*) On page 14 of the Office Action, the Examiner references Figure 2 of the Beroza Publication as allegedly illustrating “an

iterative top-down procedure of focusing on a portion of a protein.” (Office Action, p. 14). The Examiner further contends that “the role of [the] Beroza [Publication in the latest Office Action] is as a supporting reference to show top-down procedures and boundaries in data.” (*Id.*, p. 15). However, the Beroza Publication shows in Figure 2 thereof and describes in the text corresponding thereto a procedure for “focusing of the finite difference grid.” (Beroza Publication, p. 1237). “The grids are centered on the point charge for which the Green's function is being calculated [and the] boundary of each refined grid is initialized from the potential on the previous coarse grid.” (*Id.*)

Even if the Beroza Publication was to be interpreted as the Examiner contends, a contention with which Applicants respectfully disagree, the Beroza Publication does not teach or suggest the determination of a plurality of subintervals by repeatedly dividing an interval until a criteria is met, much less the determination of statistically-outlying data points present in the dataset based on information related to the subintervals where each particular data point of the statistically-outlying data points is associated with a particular subinterval of the subintervals and determined as a function of the length of the particular subinterval associated with the particular data point, as explicitly recited in amended independent claims 1, 25 and 37 of the above-identified application.

With respect to the Schwartz Patent, this publication “relates to single molecule optical sequencing methods and systems for determining the nucleotide sequence of individual double stranded nucleic acid molecules elongated and fixed to a

solid-surface by nicking the nucleic acid molecule, enzymatically adding labeled nucleotides and imaging the labeled nucleotides.” (Schwartz Patent, Abstract).

In the Office Action, the Examiner contends that “Figure 9 of [the Schwartz Patent allegedly], as described in column 9, lines 27-28, is a variable block diagonal matrix for the dynamic programming for determining outlying data.” (Office Action, p. 16.) The Examiner further contends that “Figure 11 of [the Schwartz Patent allegedly] illustrates the computerized limitations of the instant set of rejected claims.” (*Id.*) In response to Applicants’ arguments contained in the Previous Response, the Examiner asserts that “the role of [the] Schwartz [Patent in the present Office Action] is as a supporting reference to show computer/software limitations.” (*Id.*, p. 17).

However, the Examiner admits in the prior Office Action dated March 5, 2009 (the “Previous Office Action”) that the Schwartz Patent “does not teach computing stopping points using a top-down procedure ultimately used to define boundaries between data and outlying data.” (Previous Office Action, p. 11). Thus, it certainly follows that the Schwartz Patent also does not teach or suggest the determination of the subintervals by repeatedly dividing an interval until at least one predetermined criteria is met, as explicitly recited in amended independent claims 1, 25 and 37 of the above-identified application.

Therefore, for at least the reasons described herein above, the rejection of amended independent claims 1 and 37, claims 2, 3 and 43 which depend from amended independent claim 1, and claims 38, 39 and 46 which depend from amended independent claim 37, under 35 U.S.C. § 102(b) as allegedly being anticipated by the

Quackenbush Publication should be withdrawn. Additionally, for at least the reasons described herein above, the rejection of amended independent claim 25, and claims 26, 27 and 45 which depend therefrom under 35 U.S.C. § 103(a) as allegedly being unpatentable over the alleged combination of the Quackenbush Publication and the Schwartz Patent should be withdrawn.

Further, Applicants respectfully assert that the rejection of now-cancelled claim 5 under 35 U.S.C. § 102(b) as allegedly being anticipated by the Quackenbush Publication is now moot, and should be withdrawn. Moreover, Applicants respectfully assert that the rejections under 35 U.S.C. 103(a) of now-cancelled claim 4 as allegedly being unpatentable over the Quackenbush Publication in view of the Pearson Publication, of now-cancelled claims 6-8 and 12 as allegedly being unpatentable over the Quackenbush Publication in view of the Beroza Publication, of now-cancelled claims 13-15, 17 and 44 as allegedly being unpatentable over the Quackenbush Publication in view of the Schwartz Patent, and of now-cancelled claims 16 and 28 as allegedly being unpatentable over the Quackenbush Publication in view of the Schwartz Patent and the Pearson Publication are now moot, and should withdrawn.

## **VI. NEW CLAIMS**

New claims 47-64 have been added herein above to recite certain subject matter which Applicant believes includes novel features and is separately patentable. In particular, new claims 47-54, claims 55-62 and claims 63 and 64 depend from amended independent claims 1, 25 and 37, respectively. Support for new claims 47-64 can be found in the originally-filed application, including the specification, drawings and/or



claims thereof. (See, e.g., Specification of the above-identified application, p. 6, ln. 22 – p. 11, ln. 12 and p. 13, ln. 11 – p. 14, ln. 10, and Figures 1-5).

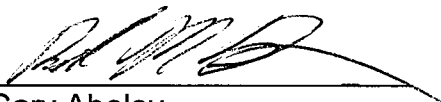
For at least the reasons described herein above with respect to amended independent claims 1, 25 and 37, Applicants respectfully assert that the references relied on by the Examiner to reject the previously-pending claims of the present application also fail to teach or suggest the subject matter recited in new claims 47-64 of the above-identified application.

## VII. CONCLUSION

In light of the foregoing, Applicants respectfully submit that all claims under consideration 1-3, 25-27, 37-39, 43 and 45-64 and are in condition for allowance. Prompt consideration, reconsideration and allowance of all of the claims of the above-identified application are therefore earnestly solicited. If any issues remain outstanding, the Examiner is invited to contact the undersigned via the telephone number provided below.

Respectfully submitted,

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